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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/016,578	11/01/2001	James D. Parsons	9109-33	4011

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EXAMINER	
ROCCHEGIANI, RENZO	

ART UNIT	PAPER NUMBER
2825	

DATE MAILED: 10/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/016,578	PARSONS ET AL.	
	Examiner	Art Unit	
	Renzo N. Rocchegiani	2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 November 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/01/2001*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed November 1, 2001 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each document listed that is not in the English language. Specifically, the document by Jacek Jablonski and Waldemer Bielawski is not in the English language thus, this reference has been crossed off the IDS and it has not been considered. There remaining references have been considered.

Priority

2. An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification or in an application data sheet (37 CFR 1.78(a)(2) and (a)(5)). The specific reference to any prior nonprovisional application must include the relationship (i.e., continuation, divisional, or continuation-in-part) between the applications except when the reference is to a prior application of a CPA assigned the same application number.

3. This application filed under former 37 CFR 1.60 lacks the necessary reference to the prior application. A statement reading "This is a Division of Application No. 09/351,106, filed 07/06/1999, now U.S. Patent No. 6,319,757." should be entered

following the title of the invention or as the first sentence of the specification. Also, the current status of all nonprovisional parent applications referenced should be included.

Claim Objections

4. Claim 11 is objected to because of the following informalities: it recites "Al_2O_z", this seems to be a typo and should be "Al_2O_3". Please clarify. Appropriate correction is required. For the purposes of this office action the examiner understands the claim to refer to Al_2O_3.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-2 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No. 6,169,330 B1 (Pankove).

Pankove discloses a semiconductor device comprising an AIN substrate (item 12) with a SiC die (item 20) thereon wherein the SiC die with metal connections is adhered to the AIN substrate by a layer, e.g. Au (items 14 and 21), that can withstand temperatures in excess of 1000 degree C (examiner points out that the melting point of Au is higher than 1000 degree C). Furthermore, Pankove discloses encapsulating the

structure with a ceramic encapsulant that an withstand high temperatures. (col. 6, lines 5-15).

7. Claims 9-11 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No. 6,271,579 B1 (Going et al.).

Going et al. disclose a device comprising a ceramic layer (item 106) such as AlN or Al_2O_3 (col. 19, lines 35-45) with a metal layer thereon (item 202), and comprising a borosilicate glass over the whole structure (item 304 and col. 18, lines 60-67).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,169,330 B1 (Pankove) in view of US Patent No. 4,374,391 (Camlibel et al.).

As stated in paragraph 6, all the limitations of this claim have been met except for specifying that the ceramic material comprises borosilicate glass.

Camlibel et al. teach the use of borosilicate glass as a coating for a semiconductor device wherein the borosilicate glass has, *inter alia*, the property of being able to withstand high temperatures. (col. 3, lines 1-15).

It would have been obvious to one with ordinary skill in the specific art to combine the teachings of Camlibel et al. to those of Pankove and to use borosilicate

glass for the ceramic encapsulant material in Pankove, since borosilicate glass, as taught by Camlibel et al., has the necessary property required in Pankove and it has been held to be with the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,169,330 B1 (Pankove) in view of US Patent No. 4,374,391 (Camlibel et al.) and in further view of US Patent No. 5,629,559 (Miyahara).

As stated in paragraph 9, all the limitations of this claim have been met except for specifying that the borosilicate glass is also used as the adhesive layer between the silicon carbide and the AlN.

Miyahara teaches the use of borosilicate glass as an adhesive layer (col. 8, lines 50-67).

It would have been obvious to one with ordinary skill in the specific art to combine the teachings of Miyahara to those of Pankove and to use borosilicate glass for the adhesive layer in place of the gold layer in Pankove, since Miyahara teaches that borosilicate glass is a good substitute for metal adhesives. (See Miyahara, col. 8, lines 50-67).

11. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,169,330 B1 (Pankove) in view of US Patent No. 5,629,559 (Miyahara).

As stated in paragraph 6, all the limitations of this claim have been met except for

specifying that the borosilicate glass is also used as the adhesive layer between the silicon carbide and the AlN.

Miyahara teaches the use of borosilicate glass as an adhesive layer (col. 8, lines 50-67).

It would have been obvious to one with ordinary skill in the specific art to combine the teachings of Miyahara to those of Pankove and to use borosilicate glass for the adhesive layer in place of the gold layer in Pankove, since Miyahara teaches that borosilicate glass is a good substitute for metal adhesives. (See Miyahara, col. 8, lines 50-67).

12. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,169,330 B1 (Pankove) in view of US Patent No. 5,629,559 (Miyahara) and in further view of US Patent No. 4,374,391 (Camlibel et al.).

As stated in paragraph 11, all the limitations of this claim have been met except for specifying that the ceramic material comprises borosilicate glass.

Camlibel et al. teach the use of borosilicate glass as a coating for a semiconductor device wherein the borosilicate glass has, *inter alia*, the property of being able to withstand high temperatures. (col. 3, lines 1-15).

It would have been obvious to one with ordinary skill in the specific art to combine the teachings of Camlibel et al. to those of Pankove and to use borosilicate glass for the ceramic encapsulant material in Pankove, since borosilicate glass, as taught by Camlibel et al., has the necessary property required in Pankove and it has been held to be with the general skill of a worker in the art to select a known material on

the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

13. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,169,330 B1 (Pankove) in view of US Patent No. 5,629,559 (Miyahara) and in further view of US Patent No. 5,502,003 (Ogino et al.)

As stated in paragraph 11, all the limitations of this claim have been met except for specifying that the metal conductor is made of tungsten.

Ogino et al. teaches the formation of conductor contacts on SiC using tungsten. (abstract).

It would have been obvious to one with ordinary skill in the specific art to use tungsten to form the metal contacts, since Ogino et al. teach that using tungsten will result in a stable electrode where the contact resistance does not increase with temperature. (See Ogino et al., abstract).

14. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,169,330 B1 (Pankove) in view of US Patent No. 5,309,006 (Willems et al.)

As stated in paragraph 7, all the limitations of this claim have been met except for teaching the use of platinum for the metal layer.

Willems et al. teach a semiconductor device with conductive leads that comprise platinum. (col. 5, lines 5-15).

It would have been obvious to one with ordinary skill in the specific art to form the conductive leads of platinum, since Willems et al. teach that platinum is a conventionally known and used material for this purpose and since it has been held to be with the

general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Double Patenting

15. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

16. Claims 1-7 and 9-10 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 19 of U.S. Patent No. 6,765,278 B2. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims cover the same limitations, while the pending application has separated the limitations in multiple claims, claim 19 of the '278 patent already covers the same subject matter.

17. Claim 11 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 19 of U.S. Patent No. 6,765,278 B2 in view of US Patent No. 6,271,579 B1 (Going et al.). As stated in paragraph 16, the limitations of claim 11 are already claimed by claim 19 of the '278 patent, the only exception is that claim 19 of the '278 patent does not mention aluminum oxide as a

possible substrate, yet Going et al. teaches a device comprising a ceramic layer (item 106) such as AlN or Al_2O_3 (col. 19, lines 35-45) with a metal layer thereon (item 202), and comprising a borosilicate glass over the whole structure (item 304 and col. 18, lines 60-67), thus, in view of the Going et al. reference, this additional limitation is obvious because Going et al. teaches that AlN as claimed by claim 19 of the '278 is interchangeable with aluminum oxide.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Renzo N. Rocchegiani whose telephone number is (571)272-1904. The examiner can normally be reached on Mon.-Fri. 8:00 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (571)272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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